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ABSTRACT

This paper provides an overview of Breakthrough to Literacy, a research-based early literacy program that combines interactive software, quality print materials, take-home materials and staff development to provide individualized reading instruction for students. It uses technology to help children understand the relationship between sound, print, and meaning. Kits are offered for three grade levels: prekindergarten, kindergarten, and first grade. Breakthrough to Literacy currently serves more than 40,000 children in 36 states. Major program components include: daily story reading (with particular objectives); interactive computer software (with individually tailored lessons through which students progress at their own pace); integrated print and computer curriculum materials; assessments; print materials (for shared, guided, and independent reading and for writing activities); staff development; and take-home materials (children and parents are encouraged to read together at home). Sections of the paper discuss background, philosophy and goals, program components, evidence of effectiveness, professional development and support, implementation, costs, considerations, contact information, and policy issues and questions. (SR)

Breakthrough to Literacy.

Breakthrough to Literacy

Background - Philosophy and Goals - Program Components - Evidence of Effectiveness
Professional Development and Support - Implementation - Costs - Considerations
Policy Issues and Questions - Resources

Topic or Category: Reading
Grade Level: Pre-K-2
Target Population: General, At-risk, ESL, Rural students

OVERVIEW

Background and Scope:

Breakthrough to LiteracyTM was developed in 1981 by Carolyn Brown and Jerry Zimmerman, professors at the University of Iowa. It is a research-based early literacy process that combines interactive software, quality print materials, take-home materials and staff development to provide individualized reading instruction for students. The program was developed from a research effort that showed how children use auditory, pictorial and textual information. From this initial work, Carolyn Brown created a way to use technology to help children understand the relationship between sound, print and meaning.

The Wright Group publishes Breakthrough to Literacy and offers kits for three grade levels: prekindergarten, kindergarten and 1st grade. First implemented in Dallas Public Schools in 1994, Breakthrough to Literacy now serves more than 40,000 children in 36 states.

Philosophy and Goals:

The goal of Breakthrough to Literacy is to teach pre-K through 2nd-grade students the relationship that oral language and pictures have to printed words. The program provides each child, at his or her level of language/literacy development, stories and access to direct and explicit instruction for phonemic awareness through the use of "Big Books," pupil books and computer models. The combination of literature-based instruction and instructional technology is intended to help children develop better phonemic awareness, enhance their vocabulary development and promote an understanding of sound-symbol relationships. Children progress through the program at their own pace through daily individual sessions with teachers and computers. Parents are urged to read to and with their children daily (NWREL, 1998).

The developers seeks to enter a relationship with schools and districts through which they become a full partner in helping to make the program successful for students and teachers. The developer attempts to engage administrators and teachers in discussions about building effective early literacy environments throughout the process of implementing Breakthrough to Literacy.

Program Components:

The main components of Breakthrough to Literacy include the following:
Daily Story Reading: Teachers read to children every day with a different objective, such as introducing the book and illustrator to the students, reviewing the previous day's work and portraying the book's characters, integrating the story or relating the story to personal experiences.
Interactive Computer Software: Students use individually tailored lessons and progress through materials at their own pace to improve reading skills.
Integrated Print and Computer Curriculum Materials: Children work 15-20 minutes daily at the

computer, connecting what they see on-screen to the book's content, and vice versa.
Assessments: Breakthrough to Literacy's software program automatically assesses each student's progress and adjusts to his or her level of language development. Teachers can use a built-in management system to monitor student progress and to tailor classroom instruction.
Print Materials: The print materials are used for shared, guided and independent reading and writing activities in the Breakthrough to Literacy learning process.
Staff Development: Inservice training workshops and classroom follow-up support are provided (see description below).
Take-Home Materials: Children and parents are encouraged to read together at home. Each Breakthrough to Literacy classroom kit includes more than 30 Take-Me-Home titles. In addition, parents are provided with progress reports and guides to help their children succeed.

Evidence of Effectiveness:

Summary of Evidence:
To date, no independent or large-scale controlled evaluations have been conducted on the effectiveness of Breakthrough to Literacy. A large-scale study conducted in Dallas, however, (see below) to examine the effectiveness of a different computer-based reading program, revealed that Breakthrough to Literacy students outperformed students participating in similar programs. In addition, data from several districts and schools (some which included control groups and/or pretest and post-test scores) found that the program can significantly and positively affect student reading skills. Breakthrough to Literacy, Inc. is in the process of working with independent investigators and districts to gather and report longitudinal data on the impact of the program as children move from 2nd to 3rd grade.

Several assessment tools have been used to determine Breakthrough to Literacy's impact on vocabulary, listening and word analysis, including the Test of Phonemic Awareness (TOPA), the Yopp-Singer Test of Phoneme Segmentation and the Lindamood Test of Auditory Conceptualization.

Discussion of Evidence:
A large-scale study was conducted in the Dallas Independent School system (Shapley, 1997) to examine the effectiveness of a computer-based reading program on kindergarten students' vocabulary and word-analysis skills. The program was compared to five other computer-based programs, including Breakthrough to Literacy. In addition, noncomputer-based programs were compared with the program being studied. Students' spring 1997 Iowa Tests of Basic Skills (ITBS) scores were used to compare the effectiveness of the various programs. The study's author noted the following limitations of the evaluation:
Comparison groups were made up of intact groups rather than randomly selected subjects.
No pretest achievement data were available, although concomitant variables were used to control for achievement differences.
Although data were available for some computer-based programs, kindergartners participated in a plethora of instructional programs in the schools.

Despite the study's limitations, Breakthrough to Literacy students showed strong performance results in comparison to other computer-based programs. The following conclusions were noted by the study:
The most successful kindergarten program for enhancing vocabulary development appeared to be Breakthrough to Literacy. Students had significantly higher vocabulary scores than students in all of the comparison groups except for one other program.
Students in Breakthrough to Literacy significantly outperformed all comparison groups with the exception of one program.

Dallas I.S.D Kindergarten
Average ITBS Scores, May 1997

ITBS Subtest	Breakthrough to Literacy Students N= 790	Other Computer-Based Program Students N= 1,070	Noncomputer Based Program Students N= 1,006
Vocabulary	71	55	60
Word Analysis	61	53	61

District-Level Results:
School City of East Chicago, Indiana
During the 1997-98 school year, the district embarked on an extensive pilot of the Breakthrough to Literacy program (Nolan, 1998). The program was placed in 30 classrooms in all seven elementary schools. All incoming 1st graders took the Terra Nova Level 10 test in September 1997 as a pretest measure. The Breakthrough program was used for approximately five months prior to the administration of the 1st-grade post-test in May (Terra Nova Level 11).

Post-test results indicated that students in the Breakthrough to Literacy program scored over three normal curve equivalents (NCEs)* higher than the control group in reading and two NCEs higher in language. Since a growth of two NCEs in the course of an entire year is considered statistically significant, the district considered the pilot program a success. (*For any test, at any grade, an NCE score of 50 is "average" and thus equals grade level. Although it is not totally accurate, NCE gains can be thought of as approximating percentile gains.)

The district examined the Terra Nova test scores of 2nd graders, those who had participated in Breakthrough to Literacy in 1st grade and those who had not. The Breakthrough to Literacy students out-performed the non-Breakthrough students on every reading, vocabulary and language subtest. Breakthrough to Literacy students scored above the national average on every subtest by one. These students outscored their counterparts in math as well as reading and language.

Another area the district focused on was Breakthrough to Literacy's impact on bilingual students' achievement. Scores from the 2nd-grade Terra Nova test for September 1998 were compared to rosters from the previous year's bilingual classes. All eight 2nd-grade bilingual classes were included in the study. A direct match was made for 51 Breakthrough and 41 non-Breakthrough students. Breakthrough students scored significantly higher than the non-Breakthrough students in all areas of reading and word analysis and in word meaning; the two groups were equal in Words in Context. Breakthrough students scored higher than the national average in every area except Words in Context and Consonants.

School-Level Results:
De Zavala Elementary, Ft. Worth, Texas
Three classrooms were pretested in February and then post-tested after fewer than four months of working with the Breakthrough to Literacy program. Student progress was measured with the Peabody Picture Vocabulary Test. Pretest scores showed the following performance levels: (a) Classroom One scored below the 1st percentile, (b) Classroom Two scored at the 64th percentile, and (c) Classroom Three scored at the 44th percentile. Post-test scores showed the following student progress: (a) Classroom One students scored at the 20th percentile, (b) Classroom Two scored at the 73rd percentile, and (c) Classroom Three scored at the 48th percentile.

Tuscaloosa, Alabama
Four kindergarten classrooms used Breakthrough to Literacy during the 1997-98 school year. No control group was used, but students in all classes made significant gains in subtests (beginning reading skill, story comprehension and prereading composite) of the Metropolitan Readiness test.

Metropolitan Readiness Average Scores of Kindergarten Classes, Pretest October 1997 - Post-test May 1998
Scores presented as National Percentile Rank
Tuscaloosa, Alabama

Subtest	Classroom 1 Pretest	Classroom 1 Post-test	Classroom 2 Pretest	Classroom 2 Post-test	Classroom 3 Pretest	Classroom 3 Post-test	Classroom 4 Pretest	Classroom 4 Post-te
Beginning Reading Skill	16.2	31.8	9.3	34	23	41	21	35
Story Comprehen-sion	21.4	37.8	23	42	21	33	19	40
Prereading Composite	16.2	29.6	21	33	19	27	19	34

Other School-Level Data:
In 1996, Dallas kindergartners using Breakthrough to Literacy (total N=2,089) tested 12-20% higher in vocabulary, word analysis and math on the Iowa Test of Basic Skills (ITBS) than children in three control schools (total N=514).
In 1997, kindergartners in Norfolk, Virginia, tested 10-35% higher than controls in vocabulary and word analysis on the ITBS.
In 1997, a San Francisco kindergarten class tested 8-14% higher than controls on a Yopp-Singer Test of Phonemic Awareness.

Student Retention Rates
In a study of 11 classrooms in Norfolk, Virginia, the retention rates of 1995-96 1st graders who had no experience with Breakthrough to Literacy were compared to 1996-97 1st graders who used the program in kindergarten but not 1st grade. Chesterfield Academy showed a 55% decrease in the retention rate, and Robert Parks Elementary showed a 50% decrease. The third school's retention rate started out as less than half the rate of the other schools tested and showed no change, but had the largest increase in kindergarten standardized scores of the three schools.

Professional Development and Support:

Breakthrough to Literacy provides two years of comprehensive professional development training and support. Three full-day, onsite workshops focus on language and literacy, including a full day of training immediately before implementation, a second day after four weeks (program integration) and again at eight weeks (interpreting results, developing lesson plans). Five follow-up visits to each teacher's classroom are spaced across the first year of implementation. Also included is a two-hour administrator's overview.

The second year of support includes one full-day workshop and four follow-up visits. Breakthrough to Literacy supports a toll-free hotline and quarterly newsletter. Training and support is provided by the Wright Group in Bothhell, Washington.

Implementation:

Principals, teachers and superintendents attend a meeting to decide if they want to use the program. "Buy-in" by teachers, principals and district officials is an important factor in the successful implementation of Breakthrough to Literacy. The developers (at the University of Iowa) receive progress reports and data from districts and employ independent quality assurance firms to assess progress in some districts.

An implementation involves four essential practices that are covered in staff development and support by literacy coaches, including the following:
Daily computer time (15-20 minutes K-1; 12-15 minute pre-K)
Daily writing (at a developmentally appropriate level)
Book-of-the-Week (language and literacy oral comprehension strategies)
Regular use of Take-Me-Home Books (one per week)

Teachers are encouraged and trained to use the computer-generated reports to tailor small-group and individual activities to their students' developmental needs. Schools and districts must provide the necessary technology and materials for the program (see description in Costs section).

Costs:

The total classroom cost (not including computers, printer, headsets and microphones) to implement Breakthrough to Literacy is approximately $12,500. Most of this cost covers teacher and administrator training, but also includes software, books (Big Books, Pupil Books, Take-Me-Home books, writing journals), teacher resource materials, access to a toll-free customer support number for technical assistance, a teacher-oriented newsletter and other materials to enhance the program's effectiveness. Each classroom must have two to three computers (Windows 95/98 or Mac OS 7/8), headphones, microphones and other peripherals. Printers are suggested for each classroom.

Considerations:

As with many programs, Breakthrough to Literacy has a greater chance to impact student performance positively if teachers and administrators "buy in" to the program from the beginning and remain committed throughout its implementation.

District and school leaders should be aware of the program's requirements for technology and be able to support these resources throughout its life. Cost of hardware peripherals (printer, headsets, microphones): For a classroom of 20 children (full day), two computers will suffice. For more than 20 students, three computers will be required. For half-day classes, sufficient numbers of computers must be available to permit each child access at least 12-15 minutes per day.

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Policy Issues and Questions:
How can states help districts and schools choose the most appropriate reading programs to improve students' skills and performance? What information would be useful?
Should states promote particular reading programs for districts and schools to use?
How can a reading program's track record be checked and validated?
What criteria should states and districts use to invest in various reading programs initially and for the long term?
How should policymakers weigh the benefits of a reading program and professional development so teachers are better equipped to help all students read successfully?

Resources:
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